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EXAMINER
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/590,933
Filing Date: August 28, 2006
Appellant(s): ESSER ET AL.

Harris A. Pitlick
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 4/19/2010 appealing from the Office action mailed 8/11/2009.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 1-18 are pending and are rejected.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the

subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

5,501,774	Burke, Anthony J.	5-1996
6,797,785	Hund et al	9-2004
6,083,348	Auhorn et al	7-2000
4,444,667	Burkert et al	4-1984
4,753,710	Langley et al	1-1988
EP-071050	Brunnmueller et al	2-1983

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

Claims 1 and 4-10 and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burke (5501774) in view of Hund et al (6797785).

Claims 1, 5-7, 9 and 14-16: Burke discloses a process of making paper comprising preparing a aqueous thickstock (high consistency stock) consisting of a feed suspension of filler and cellulosic fiber, adding a cationic coagulating agent to the

thickstock, making an aqueous thinstock (low consistency stock) by diluting the thickstock from the feed suspension, adding an anionic particulate material and a polymeric retention aid to the thinstock that is formed from the thickstock, and draining the thinstock (Abs; col 2, lines 4-22). The cationic coagulating agent has a molecular weight below about 2 million and can be a polyamine (col 4, lines 5-13).

Burke does not disclose polymers containing vinylamine units or the degree of hydrolysis. Burke does not disclose metering the vinylamine containing polymers. Burke does disclose a polyamine as a coagulant (col 4, lines 11-12).

Hund et al discloses that vinylamine containing polymers made by polymerizing vinylformamide as a homopolymer or copolymer followed by hydrolysis of from 20 to 70% of the vinylformamide units to vinylamine are used as coagulants or flocculants in papermaking. The vinylamine containing polymers result in improved retention, formation and draining (Abs; col 1, lines 24-45; col 3, lines 45-47; col 4, lines 11-16 and 27-30; col 5, line 60 to col 7, line 28). The disclosed degree of hydrolysis overlaps the claimed range.

The art of Burke, Hund et al and the instant invention is analogous as pertaining to the use of coagulants in papermaking. It would have been obvious to one of ordinary skill in the art to use vinylamine containing polymers as the coagulant in the process of Burke in view of Hund et al as a functionally equivalent option to obtain the benefits disclosed by Hund et al. Absent convincing evidence of unobvious properties due to the method of addition, metering the additives would have been obvious as a functionally equivalent option for addition. Reduction of the deposits in the wire part, press section

or drying section of the paper machine would have also been obvious because, where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent or at least obvious.

Claims 4 and 13: Burke discloses the solids content of the suspension to be coagulated (thickstock)of from 2.5% to 10%. The solids content of the thinstock is from about 0.25% to 2% by weight (col 3, lines 24-32 and 56-59).

Claims 8 and 17: Burke discloses the addition amount of coagulant from 0.005% to 2% based on the dry weight of the suspension (col 4, lines 28-31).

Claims 10 and 18: Burke discloses that the filler in the thickstock usually originates in part from recycled cellulosic material, such as broke of filled or coated paper, thus coated broke is disclosed.

Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Auhorn et al (6083348) in view of Burkert et al (4444667) as evidenced by Langley et al (4753710).

Claims 1-3, 5-7, 9, 11, 12 and 14-16: Auhorn et al discloses a method of making paper comprising metering polymers containing vinylamine units as a retention aid, drainage aid and flocculant to a main stream papermaking stock having a consistency

from 0.1 to 15%, and diluting the stock in the headbox with up to 35% by volume, based on total headbox feed, of a dilution stream consisting of white water. The polymers have molecular weight from 10,000 to 2,000,000. The treated stock is drained to make paper (Abs; col 2, lines 13-26 and 34-44; col 5, lines 59-60). Where the retention system comprises cationic polymers (e.g.- polymers containing vinylamine units) and finely divided solids, the cationic polymers are all added to the main stream (high consistency) stock and the finely divided solids to the dilution stream that is mixed with the main stream in the headbox to form a low consistency stock. Alternatively, in some embodiments, from 60-95% of the retention aids are added to the main stream and the remainder of the retention aid is metered into the dilution stream that is mixed with the main stream in the headbox to form a low consistency stock (col 6, lines 22-34). The range of consistencies overlays the claimed ranges for high consistency stock.

Auhorn et al does not disclose the degree of hydrolysis of the polymers containing vinylamine units. Auhorn does disclose that the polymers containing vinylamine units are made by hydrolysis of homopolymers or copolymers of N-vinylformamide and references EP-071050 as teaching the process (col 2, lines 53-58). Burkert et al (4444667) is in the same patent family as and will be used as the English translation of EP-071050.

Burkert et al discloses preparing a vinylamine containing polymer by homopolymerization of N-vinylformamide followed by hydrolysis of 10-90% of the formyl groups (Abs).

The art of Auhorn et al, Burkert et al and the instant invention is analogous as pertaining to the use of vinylamine containing polymers in papermaking. It would have been obvious to one of ordinary skill in the art to use vinylamine containing polymers having the claimed hydrolysis as retention aid, drainage aid and flocculant in the process of Auhorn in view of Burkert et al as suitable polymers disclosed by Auhorn et al.

Claims 4 and 13: Although not explicitly disclosed by Auhorn et al, it would have been obvious to dilute the main stream stock sufficiently to provide a consistency below 1.5% as a typical consistency of papermaking thin stock (see Langley et al, col 8, lines 35-39 if evidence is needed).

Claims 8 and 17: Auhorn discloses that the amount of addition of retention aid, drainage aid and flocculant metered into the main stream is from 0.005% to 1% by weight of the dry paper (col 2, lines 41-44).

Claims 10 and 18: Auhorn et al discloses an example wherein the stock comprises coated broke (col 7, lines 46-51, Example 3), thus a high consistency stock comprising coated broke is disclosed or, at least, would have been obvious to one of ordinary skill in the art.

Double Patenting

Claims 1-3, 5-8 and 9 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 5, 6, 8-10 and 12 of copending Application No. 11/719826 in view of Auhorn et al. The claims of the copending application embody adding polymers containing vinylamine units, made by hydrolysis of N-vinylformamide units in the claimed range, to papermaking pulp, and dewatering (draining) the pulp. An anionic polymeric compound is also added. The copending claims do not recite adding the vinylamine polymer to high consistency stock, diluting the stock, and adding the anionic polymer to low consistency stock. Auhorn et al discloses a retention system comprising adding a polyvinylamine polymer to high consistency stock, diluting the stock with a dilution stream to form low consistency stock and adding the anionic polymer (silica or organic polymer particles) with the dilution stream (Abs; col 2, lines 30-58; col 4, line 67 to col 5, line 23; col 6, lines 22-34). One of ordinary skill in the art would have found it obvious to add the vinylamine containing and retention aids as currently claimed in view of Auhorn et al. Note that Applicants admit that Auhorn et al is drawn to the claimed papermaking utility (see p 12 of Brief, last line).

This is a provisional obviousness-type double patenting rejection.

Claims 1-3, 5-6 and 8 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9, 12, 13 and 15-17 of copending Application No. 11/574677 in view of Auhorn et al. The claims of the copending application embody draining a papermaking stock in the presence of a

retention aid comprising polymers containing vinylamine units, made by hydrolysis of N-vinylformamide units in the claimed range. A cationic polyacrylamide retention aid is also added. The copending claims do not recite adding the vinylamine polymer to high consistency stock, diluting the stock, and adding the cationic or nonionic polyacrylamide to low consistency stock. Auhorn et al discloses adding up to 95% of a mixture of retention aids comprising, in some embodiments, a polyvinylamine polymer and a cationic polyacrylamide to high consistency stock, and diluting the stock with a dilution stream to form low consistency stock and adding the remainder of at least 5% of the retention aids with the dilution stream (Abs; col 2, lines 30-65; col 4, line 67 to col 5, line 23). One of ordinary skill in the art would have found it obvious to add the vinylamine containing and retention aids as currently claimed in view of Auhorn et al. Note that Applicants admit that Auhorn et al is drawn to the claimed papermaking utility (see p 12 of Brief, last line).

This is a provisional obviousness-type double patenting rejection.

Claims 1-3, 5, 6, 8 and 9 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1-5 of copending Application No. 12/065688 in view of Auhorn et al. The claims of the copending application embody adding polymers containing vinylamine units, made by hydrolysis of N-vinylformamide units in the claimed range, to papermaking pulp, and draining the stock to form a sheet. Anionic particulates, including an anionic organic polymer are also added. The copending claims do not recite adding the vinylamine polymer to high consistency stock,

diluting the stock, and adding the anionic polymer to low consistency stock. Auhorn et al discloses a retention system comprising adding a polyvinylamine polymer to high consistency stock, diluting the stock with a dilution stream to form low consistency stock and adding the anionic inorganic and/or organic polymer particles with the dilution stream (Abs; col 2, lines 30-58; col 4, line 67 to col 5, line 23; col 6, lines 22-34). One of ordinary skill in the art would have found it obvious to add the vinylamine containing and retention aids as currently claimed in view of Auhorn et al. Note that Applicants admit that Auhorn et al is drawn to the claimed papermaking utility (see p 12 of Brief, last line).

This is a provisional obviousness-type double patenting rejection.

(10) Response to Argument

Applicant argues (pp 5-7 of Brief)

- that the applied art could not have predicted the results provided by the examples in the Specification as filed and in the Declaration by Esser filed 12/24/2009;
- that Burke discloses nothing more than what Applicants have acknowledged as known, does not distinguish among various coagulating agents, and does not disclose the claimed polymer;
- that Hund et al does not recognize any significance of the degree of hydrolysis or suggest that polyvinylamine type polymers are better than the cationic coagulants of Burke; and
- that neither Burke nor Hund et al discloses the present utility for homo- and/or copolymers of N-vinylformamide.

The examples in the Specification were discussed in the Final Rejection mailed 8/11/2009, which discussion is reproduced below.

The data presented in support of the claimed invention comprise adding to a coated broke train approximately 0.009 wt-% (based on total dry paper stock as calculated from the data provided) of a single polymer having a molecular weight of 2,000,000 and comprising 10 mol% vinylamine and 90 mol% N-vinylformamide, forming a paper stock of 4% concentration comprising the coated broke and polymer, diluting the stock to 0.8% concentration and forming paper. For comparison data, the polymer was replaced by the same weight of either polyaluminum chloride, a 95 mol% polyvinylamine having a molecular weight of 400,000, or a 30 mol% polyvinylamine having a molecular weight of 400,000.

The data are not commensurate in scope with the claimed invention, which embody the steps of preparing a paper stock of any concentration deemed to be high consistency, metering into the stock a at least one homo- or co-polymer having any amount of vinylamine units; a degree of hydrolysis from 1 to 20% (hydrolysis of any species; N-vinylformamide is not necessarily the hydrolyzed species in Claim 1) and having any molecular weight greater than or equal to 1,000,000; diluting the stock to any concentration deemed to be low consistency and draining the stock.

The examples presented in the Declaration filed 12/24/2009 were discussed in the Advisory Action mailed 12/28/2009, which discussion is reproduced below.

The data presented [in the Declaration] provide additional evidence that using a copolymer lying within the claimed range and added to the thick stock provides improved retention of white pitch particles in the stock. The Declarant states that a good result (but not necessarily a surprising or unobvious result) is achieved when the total number of pitch particles at a size above 15 micrometers has been reduced by more than 80% relative to the blank. Obtaining a result based on a specified reference point is a goal of an optimization process. The Declaration fails to demonstrate that obtaining a good result is equivalent of obtaining an unobvious or surprising result.

In addition, the showing of unexpected results focuses on a copolymer of vinylamine and N-vinylformamide, and uses polymers having a molecular weight well above the claimed lower limit or well below the limit. The polymers are added in an amount of 400 g/t in the additional examples, but the basis for the addition is not known (e.g.-per ton of coated broke, per ton of stock, etc). Example 1 in the Specification states that the vinylamine polymer PVAm3 was added at 400 g/t based on the coated broke while Claim 8 specifies an addition amount based on dry paper stock. The claims embody polymers of any composition having any amount of vinylamine units, a degree of hydrolysis from 1-20% (hydrolysis of any species; N-vinylformamide is not necessarily the hydrolyzed species) having any molecular weight above one million and added in any amount to the stock. In addition, the claimed papermaking stock is not required to comprise coated broke or white pitch, but only interfering substances. The showing is not commensurate in scope with the claims.

Burke discloses adding a cationic coagulating agent to the thickstock (reads on high consistency stock), diluting the thickstock to make an aqueous thinstock (reads on low consistency stock) and draining the thinstock. The cationic coagulating agent can be polymeric (such as a polyamine) and has a molecular weight below about 2 million. Hund et al discloses polyvinylamine polymers having a degree of hydrolysis from 20 to 70%, which overlaps the claimed range, as coagulants that provide improved retention, formation and draining in papermaking. Absent convincing evidence of unobvious results commensurate in scope with the claims, it would have been obvious to one of ordinary skill in the art to use the polyvinylamine coagulants disclosed in Hund et al, including those overlaying the claimed composition, as coagulants in the process of Burke and to have a reasonable expectation of success in obtaining the improvements disclosed by Hund et al.

The argument that Esser, in the Declaration, is referring to a line of demarcation between a good result and a "not good" result (see p 3, last paragraph of Declaration) is the argument of counsel and cannot take the place of evidence in the record. There is no indication in the Declaration that the statement, "A good result with stock treatment is achieved when a total number of pitch particles at a size above 15 mm has been reduced by more than 80 % relative to the blank." is anything other than a desired goal, and no evidence that attaining the result is surprising or unobvious.

The disputed statement in the aforementioned Advisory Action (see p 8, last 2 paragraphs of Brief) that "one of ordinary skill in the art would have predicted that, in a

more concentrated slurry (such as the thick stock), improved contact would be made between the vinylamine polymer and the pitch particles and better retention obtained" is withdrawn as being unnecessary to support the current rejections.

The argument that the amount of polymer used in the Declaration, 400 g/t, should be interpreted as being based on the coated broke (see p 10 of Brief) as used in the examples in the Specification is the argument of counsel and cannot take the place of evidence in the record. The Declaration fails to specify the basis and the claims, which the Declaration is intended to support, recite that the polymers containing vinylamine units are used in an amount from 0.002 to 0.1% by weight based on the dry paper stock (Claim 8). It is not at all clear which basis (coated broke or dry paper stock) should be used for the examples in the Declaration. To further the confusion, the claims do not even require coated broke.

The arguments regarding the patentability of Claims 5, 6, 9, 10, 14, 15 and 18 (see pp 10-12 of the Brief) based on the supplied evidence of unexpected results are not convincing for reasons given above.

Regarding the combination of Auhorn et al and Burkert et al (see pp 12-15), Applicant argues that Auhorn et al discloses no degree of hydrolysis, that Burkert et al is drawn to a flocculant for sludge, not papermaking, and that Burkert et al discloses a broad range in the degree of hydrolysis.

As detailed in the rejection, Auhorn et al cites EP-071050 to Brunnmueller et al for the method of making polymers containing vinylamine units (col 2, lines 53-57).

Burkert et al is in the same patent family as EP-071050 and is used herein as an English translation thereof. Whether or not Burkert et al discloses using the polymers to flocculate sludge is irrelevant because the same polymers are taught by Auhorn et al for papermaking. Absent convincing evidence of unobvious results commensurate in scope with the claims, it would have been obvious to one of ordinary skill in the art to use the polyvinylamine polymers overlaying the claimed composition in the process of Auhorn et al as a functionally equivalent option and to have a reasonable expectation of success in making paper according to Auhorn et al.

The arguments regarding the patentability of Claims 5, 6, 9, 10, 14, 15 and 18 (see pp 13-15 of the Brief) based on the supplied evidence of unexpected results are not convincing for reasons given above.

Regarding the use of vinylamine polymers for a different utility, the motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. >See, e.g., In re Kahn, 441 F.3d 977, 987, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006) (motivation question arises in the context of the general problem confronting the inventor rather than the specific problem solved by the invention); Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc., 424 F.3d 1293, 1323, 76 USPQ2d 1662, 1685 (Fed. Cir. 2005) (“One of ordinary skill in the art need not see the identical problem addressed in a prior art reference to be motivated to apply its teachings.”) The claimed

method steps and polymers are disclosed in the prior art and are capable of performing the claimed utility.

Regarding the Double Patenting rejections over copending applications 11/719826, 11/574677 and 12/065688, Applicant argues that the degree of hydrolysis claimed in the copending applications suggests nothing about the significance of the presently recited range of 1 to 20 mol%, and make no distinction between high consistency and low consistency stocks (see pp 15-17 of the Brief).

Similar arguments are used regarding the double patenting rejections, and a similar response applies. The copending applications claim polyvinylamine polymers having a degree of hydrolysis overlaying the claimed ranges and do not preclude additional retention and/or drainage aids. One of ordinary skill in the art would have found it obvious to use the method of addition of Auhorn et al for the vinylamine polymer other retention aids to obtain the currently claimed subject matter and have a reasonable expectation of success in making paper. Note that Applicants admit that Auhorn et al is drawn to the claimed papermaking utility, e,g,-draining a paper comprising interfering substances (see p 12 of Brief, last line).

Note that the rejection of claims over copending application 11/574677 has been modified to recite the new claim numbers since the previously cited claims have been cancelled. This does not constitute a new ground of rejection because the claims are rejected over the same application in view of Auhorn et al.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Dennis Cordray/

Examiner, Art Unit 1791

Conferees:

/Steven P. Griffin/

Supervisory Patent Examiner, Art Unit 1791

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